

Helping Your Patients to Start Smiling More:

Using the Invisalign System

Abstract

Four diverse, yet uncomplicated, cases are presented to demonstrate the ease of using the Invisalign system. The cases exhibited are typical of many patients who present to dental practices, and serve to show how similar cases can be treated with the Invisalign system to achieve excellent results that help resolve patients' issues and have a positive impact on their lives.

Removable, comfortable, and nearly invisible, Align Technology's Invisalign is a custom-made series of clear aligners used to orthodontically move teeth. The use of Invisalign to correct misaligned and rotated teeth is a common practice nowadays. Many patients are familiar with the Invisalign brand name, and specifically ask for this treatment with respect to restoring their smiles; however, many practitioners are not aware of the wide range of cases that the Invisalign system can treat.

The objective of this article is to demonstrate 4 diverse, yet uncomplicated, cases that are easily managed using Invisalign without the use of any auxiliary devices. The cases exhibited are typical of many patients who visit dental offices. Once practitioners are able to recognize that the patients in these types of straightforward cases can be treated with the Invisalign system without much difficulty, they will be able to help their patients resolve minor issues that can have a major impact on their lives.

Case 1

A 28-year-old male patient presented to the office seeking to improve the appearance of his teeth. His chief com-

plaint was with the crowding of his lower teeth. A comprehensive examination revealed that the patient had a stable Class I occlusion, with a 2-mm overbite and a 3-mm overjet. The patient had mild anterior crowding in the maxilla, and moderate anterior crowding in the mandible. No carious lesions or periodontal concerns were noted.

The patient did not want traditional orthodontic braces, and opted for Invisalign treatment. Detailed polyvinyl siloxane impressions were taken (Splash!, Discus Dental), along with a bite registration (Vanilla Bite, Discus Dental), radiographs, and intraoral photographs.

The initial presentation is shown in Figure 1. In the maxilla, tooth No. 9 is located labially while tooth No. 8 is angled slightly palatally. In addition, the maxillary lateral incisors are misaligned with spaces distal to the canines. In the mandible, tooth No. 24 is blocked out labially with crowding of 8 mm around the anterior teeth because of a constricted anterior segment. ClinCheck (Figure 2) is Align Technology's 3-dimensional virtual image of the teeth based on the impressions sent to Invisalign. Treatment progression can be visualized to show the natural movements of the teeth based on your treatment plan. This allows the practitioner to see the final phase of treatment and make any modifications. Once the layout has been designed and approved, aligners are made in sequence based on the projected ClinCheck models.

The treatment objectives for this case were straightforward. Interproximal reduction (IPR) would be performed



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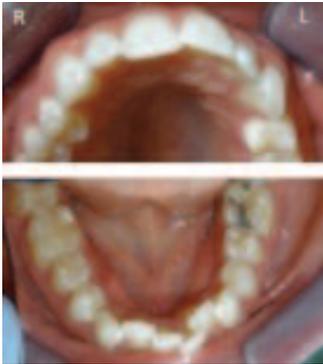


Figure 1 — Case 1
Patient's appearance at initial presentation. Note the crowding in both maxillary and mandibular arches.

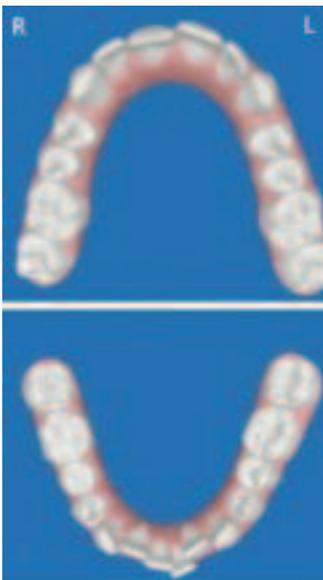


Figure 2 — Case 1
The virtual ClinCheck model is a 3-dimensional representation of the clinical case.



Figure 3 — Case 1
Case photos at end of treatment demonstrate symmetrical alignment of the teeth.

on the mandibular anterior region while rotating and aligning the teeth. IPR allows the practitioner to create room in an otherwise constricted area, so that there is adequate space for the necessary tooth rotations. IPR is achieved with the use of diamond strips or rotary disks, and is prepared before the actual tooth movements. In this example, it was

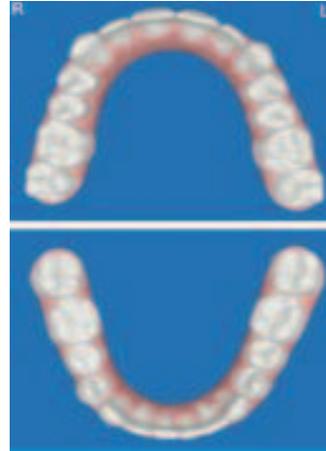


Figure 4 — Case 1
Note how the ClinCheck model accurately predicted the actual treatment outcome.

necessary to perform approximately 2.5 mm of IPR throughout the case in the mandibular arch. The maxillary anterior segment was expanded and reclined slightly. A total of 20 aligners corresponding to approximately 1 year of treatment were created to achieve this goal.

The patient wore each set of aligners for a 2-week period. The aligners are meant to be worn full time, except when eating, drinking, and brushing. During this time, the patient presented to the office every 4 to 6 weeks for IPR and close monitoring of the case.

The final treatment outcomes can be seen in Figure 3. The images here represent the actual intraoral pictures at the end of treatment. The final ClinCheck images are shown in Figure 4. Once completed, the patient was given retainers to stabilize this new position. Though this case may have initially looked complicated because of the amount of crowding in the mandibular arch, we were able to easily correct the misalignment within a very reasonable amount of time. The patient was so happy with the results that he referred an additional 3 patients to our practice for Invisalign treatment.

Case 2

A 38-year-old female patient wished to improve her smile. A few years before, her previous dentist placed laminate veneers on her 6 anterior teeth to conceal the “gaps,” but the spaces had reopened and were unsightly. The patient did not wish to have any fixed restorative dentistry and inquired about Invisalign treatment.

A full work-up was performed, which indicated that the patient had a stable Class I occlusion with moderate

spacing in the maxillary anterior region and mild anterior mandibular spacing. She also had 4 mm of overjet present, with laminate veneers present on teeth Nos. 6 through 11. Observe in Figure 5 the large diastema present between teeth Nos. 9 and 10, with spaces present distal to the mandibular lateral incisors.

The treatment goal for this patient was to retrude the maxillary and mandibular arches slightly, while rotating the teeth to align their contact points. This would bring the teeth closer together, without changing the patient's occlusion and helping to slightly improve her profile. No IPR was to be performed.

A total of 15 aligners for the maxilla and 12 aligners for the mandible were created. Total treatment time was only 8.5 months for the maxilla and 7 months for the mandible. At the end of treatment, all diastemas were closed, with proper contacts present between all anterior teeth (Figure 6). The patient was given retainers with complete instructions to help ensure that her teeth will not move in the future.

Even though this patient was almost 40-years-old, there was no difficulty treating her. We were able to correct her smile using only the Invisalign system with no complications, despite the distance between her maxillary anterior teeth. The patient stated that she would have opted for Invisalign over veneers originally if she had known about this treatment modality at that time.

Case 3

A 27-year-old female presented for a cleaning and a dental check-up. On examination, it was noted that tooth No. 8 was misaligned because it was located more labial than the corresponding central incisor. Approximately 4 mm of overlap was noted around the maxillary centrals and laterals (Figure 7).

Treatment options were discussed with the patient, including fixed bracket orthodontics and removable Invisalign. Treatment goals for this patient were to treat the maxillary arch solely. IPR was to be performed in the anterior portion (1.6 mm) to increase the available space, while simultaneously aligning and leveling the teeth. Ten aligners were fabricated for this case, resulting in only 6 months of treatment using the Invisalign Express method. Invisalign Express is qualified for cases using 10 or fewer



Figure 5 — Case 2
Maxillary and mandibular arches with spaces present at work-up examination.



Figure 6 — Case 2
In less than 9 months treatment time, all diastemas were properly closed. No interproximal reduction (IPR) was necessary to help accomplish this case.



Figure 7 — Case 3
Note buccal position of tooth No. 8, resulting in an uneven smile.

aligners, and is significantly more affordable than a full Invisalign case.

At the conclusion of treatment, the anterior teeth were aligned and harmonious with the rest of her smile (Figure 8). The patient was ecstatic that she was able to achieve her perfect smile with clear, invisible aligners.



Figure 8 — Case 3
Tooth No. 8 in its proper position with Invisalign Express.



Figure 9 — Case 4
Maxillary arch with a palatally blocked out right canine; mandibular arch exhibits minor crowding.



Figure 10 — Case 4
Image displays difference between initial presentation and resolution of malocclusion after the Invisalign process.



Figure 11 — Case 4
All teeth display proper alignment at the conclusion of treatment.

Case 4

A 35-year-old female presented to the office for an Invisalign consultation. Her chief complaint was that her canine tooth didn't show and made her smile look funny in photographs.

A comprehensive examination was performed that revealed that tooth No. 6 was palatally blocked out of the arch with 6 mm of crowding in the maxilla. The existing

mesiodistal space for this tooth was insufficient. In addition, a crossbite with tooth No. 27 was evident. The mandibular anterior teeth were also crowded with 3 mm of overlapping present (Figure 9). The patient had a Class I occlusion, with no caries or periodontal issues.

The projected treatment for this case included the use of IPR in both maxillary and mandibular arches; 1.0 mm of reduction would be needed in the maxillary arch and only 0.6 mm of IPR would be performed in the mandible. In addition, tooth No. 7 would be pushed labially, creating room for tooth No. 6 to be positioned into the arch. When properly aligned, tooth number 7 would be returned to its place, providing a balanced, even arch form. A total of 25 aligners were fabricated for the maxillary arch (14.5 months of wear time), and 14 aligners for the mandibular arch (8 months of wear time).

Once treatment was complete, tooth No. 6 was positioned back into alignment. The crossbite between the tooth and its counterpart was relieved. Figure 10 shows the initial condition and the rectified situation at the end of treatment. It can be seen how tooth No. 6 is now properly aligned within the maxillary arch. The crowding of the mandibular teeth was also corrected during the Invisalign process (Figure 11).

This patient works in a busy law firm and holds many meetings with clients. She did not wish to wear braces, and was pleased to have invisible aligners move her teeth and improve her smile.

Conclusion

Four cases are described that were readily treated using only the Invisalign system. The cases demonstrate how the Invisalign system successfully treated moderate crowding, diastemas, and overlapped teeth. There was only minimal discomfort during the process, and patients are able to remove the appliances as needed.

Patients are pleased to know that they are correcting their smiles with invisible aligners and not brackets or fixed prosthesis. The patients described in these cases are representative of a wide variety of people routinely seen in the dentist's office. By offering the Invisalign system to your patients, you will be able to help correct minor orthodontic concerns without difficulty, thus producing greater patient satisfaction.